ACTUARIAL REPORT

on the

CIVIL SERVICE SUPERANNUATION FUND

as at

DECEMBER 31st, 1983

TURNBULL AND TURNBULL

The Chairman and Members of the Board,
Civil Service Superannuation Fund,
Winnipeg, Manitoba.

1. Introduction

This Report presents the results of the Actuarial Valuation of the Superannuation Fund made as at December 31st, 1983.

The purpose of this valuation is to:

(a) determine the financial po· ion of the Fund as at the valuation date,

(b) determine the adequacy o· the contribution rates in relation to the portion of the benefits financed by the Fund, and

(c) provide recommendations as to the future course of action based on the financial position revealed.

The financial position of the Fund is determined on the basis of those persons who are participating in the Fund at the valuation date. Separate information is provided to indicate the expected financial effect of the participation of employees who begin to contribute after the valuation date.

Each year, the Fund receives contributions and investment income and pays benefits and expenses. This process continues for as long as there are contributors and persons entitled to benefits.

Each employee contributes while in service, and either he or his beneficiary becomes entitled to benefits when that service terminates.

The amount received by the Fund or paid out of the Fund in future will depend upon future experience and the requirements contained in the Civil Service Superannuation Act (Act), as it exists from time to time.

The Actuary of the Fund estimates these amounts by:

(a) anticipating that there will be no further amendments to the Act, and

(b) making assumptions concerning future experience.

These assumptions are based on actual experience in relevant prior periods. The actual experience is modified where necessary to reflect expected future trends. The choice of assumptions is discussed in a subsequent Section of this Report. These assumptions are needed in order to determine:

(a) the probability that an employee participating in the Fund on the valuation date will still be an employee at each age in the future,

(b) the contributions that are expected to be paid by such an employee at each age in the future,

(c) the probability that, at each age in the future, one of the following events will occur to an employee participating in the Fund on the valuation date: death after commencement of the pension, death in service, termination of service, retirement due to disablement, or other retirement,

(d) the probability that an employee who dies in service will have an eligible survivor,

(e) the probabililty that an employee who has a choice will choose a pension instead of a cash settlement,

(f) the amount which will be paid for each eventuality if the event occurs at each age in the future at which such an eventuality can occur, and

(g) the investment income which can be earned on the assets and future contributions from the valuation date or the date received, if later, until the date the benefit payments and expenses become due.

Some of the present participants in the Fund will likely still be contributing to the Fund each year for at least the next 45 years. Some of the present participants will be entitled to receive benefits from the Fund each year for at least the next 65 years. Contributions are made throughout service and benefits become due only after service ceases. As a result, income is received and expenditures are incurred at different times in the future.

It is possible to compare these amounts at a single date, such as a valuation date, only by computing the present value of each item of income and expenditure. The present value of an item of income is the amount which, if available now and invested at the assumed rate of return, would accumulate over the years to exactly the same amount as is expected to be contributed at a specified date in the future. The present value of an item of expenditure is the amount which, if available now and invested at the assumed rate of return, would accumulate over the years so that there would be exactly sufficient proceeds of such investment available to pay the expenditure as it becomes due.

The results of these computations are shown in the Valuation Balance Sheet.

2. Source of Information

The information on which the valuation is based included the following:

(a) Diskettes which provided information for each employee as at December 31st, 1983. Details of the information provided included: employer code, social insurance number, employee number, sex, date of birth, date of entry into the Fund, salary received in 1983, the proportion of 1983 worked while an employee to obtain the salary reported, required employee contributions, and total interest on these contributions accumulated to the valuation date.

(b) Diskettes which provided information for each pensioner as at December 31st, 1983. Details of the information provided included: employer code, name, social insurance number, sex, date of birth, date of retirement, type of pension, and amount of monthly pension. For each pensioner, the portion of the pension charged to the Fund, now and in the future, was also provided. Similar information was provided for each beneficiary or potential beneficiary.

(c) Information for each former employee entitled to receive a deferred pension as at December 31st, 1983. Details of the information provided included: employer code, employee identification number, sex, date of birth, age at which pension is expected to commence, and amount of pension payable.

(d) A list of transfers to Reciprocating Employers outside of Manitoba and to Reciprocating Manitoba Employers.

(e) A list of terminations which occurred prior to January 1st, 1984, but for whom refunds were not processed until after that date.

(f) A record of the general increases in salary granted to employees during 1983.

(g) A list of changes made to the basic information, such as: sex, department number, employee identification number, date of birth, and date of entry.

(h) Information indicating the installment payments received by the Fund up to December 31st, 1983 in respect of non-pensionable employment and war service from contributors who had payments still to make as at December 31st, 1983.

(i) The financial statements of the Fund including the balance sheet and income and expenditure statements for 1983.

(j) The Annual Report of the Superannuation Board for 1983.

(k) A detailed list of investments held as at December 31st, 1983.

(l) A copy of The Civil Service Superannuation Act, with amendments to December 31st, 1983.

(m) A copy of Bill 24. This Bill was passed by the Legislature in 1984 and the changes implemented became effective on various dates up to January 1st, 1985.

In addition, we had available copies of prior Actuarial Reports on the financial position of the Fund.

The amounts of existing pensions and deferred pensions did not reflect the increase in pensions which occurred as a result of the amendments to the Act in 1984. These amendments became effective on August 1st, 1984. Adjustments were made to these amounts in order to reflect this increase.

The salaries received in 1983 were adjusted to obtain annual salary rates as at December 31st, 1983. The salaries received in 1983 were first converted to an annual salary for 1983 by dividing the salary by the proportion of 1983 worked while an employee. This annual salary was then adjusted to obtain the annual salary rate applicable as at December 31st, 1983. The adjustment was based on the general increases in salaries granted during 1983 by each participating employer.

The membership of the Fund was reconciled with the membership of the Fund as at December 31st, 1982 and changes in status reported since that date.

The data provided as at December 31st, 1983 was reviewed for missing information, illogical information, and was also compared to the data provided as at December 31st, 1982.

As a result of these procedures, changes were made to approximately 75 records. The small number of changes indicates that the records are very accurate.

3. Membership of the Fund

The information supplied indicated that the membership of the Fund was as follows:

	December 31st, 1983	December 31st, 1982
Employees		
- Males	15,193	15,278
- Females	9,396	9,324
Pensioners		
- Males	2,954	2,597
- Females	1,345	1,202
- Beneficiaries	671	606
Former employees who transferred to a Reciprocating Manitoba Employer and who are entitled to deferred pensions		
- Males	55	47
- Females	22	20
Former employees entitled to deferred pensions		
- Males	211	213
- Females	130	121
Employees who have postponed their retirement		
- Males	69	44
- Females	25	10
	30,071	29,462

4. Operation of the Fund

(a) Amendments to the Act

A number of amendments have been made to the Act since December 31st, 1982. Those amendments which had a significant financial effect are described below.

(i) Effective August 1st, 1984, there was a change in the method of calculating pensions under the Act. The amount of pension is now based on an average of the salaries received by an employee in the 6 years in which the employee's salaries were the highest, where these salaries are selected from the salaries received in the last 12 years of service.

Previously, the amount of pension was based on 17% of the average of the highest 6 years' salaries, plus 83% of the average of the highest 7 years' salaries, where these salaries are selected from the salaries received in the last 12 years of service.

This amendment increased the liabililties of the Fund by an amount equal to $20,887,700 as at December 31st, 1982.

(ii) Effective August 1st, 1984, there was a reduction in the reduction applied to the formula pension on early retirement prior to age 60. The reduction is now equal to 1/16 of 1% for each month between the date of retirement and the date of attainment of age 60.

Previously, the reduction was equal to 1/8 of 1% for each month between the date of retirement and the date of attainment of age 60.

This amendment increased the liabilities of the Fund by an amount equal to $3,705,000 as at December 31st, 1982.

(iii) The Civil Service Special Supplementary Severance Benefit Act (Severance Act) was adopted in 1983. The Severance Act permitted employees who were age 55 or older and who had completed at least 2 years of service to retire during the special retirement period and receive a pension. The special retirement period is defined in the Severance Act as the period beginning on March 1st, 1983 and ending on June 30th, 1983.

An employee who retired during this period received a pension which was calculated on the basis of a more favourable formula and the early retirement privilege was improved. The pension is based on the average of the salaries received by an employee in the 6 years in which the employee's salaries were the highest. No reduction was made to the pension if retirement occurred prior to age 60.

The initial calculations indicated that this amendment increased the liabilities of the Fund by an amount equal to $2,070,100 as at December 31st, 1983. The 2 changes to the Act described above, which were made subsequent to the adoption of the Severance Act, caused the financial effect which the Severance Act had on the Fund to increase. This further increase in liabilities of the Fund is equal to $551,300 as at December 31st, 1983. As a result, the increase in the liabilities of the Fund is equal to $2,621,400 as at December 31st, 1983.

This is equivalent to a reduction in the surplus of $2,399,500 as at December 31st, 1982.

(iv) At the 1982 session of the Legislature, the Act was amended to provide for transfers from surplus to the Superannuation Adjustment Account. The date of these transfers and the amounts transferred are as follows:

December 31st,	Amount
1981	$1,391,100
1982	1,565,600
1983	1,767,400

These transfers are attributable to excess interest earnings on assets supporting the liabilities of the Fund for pensions in payment.

The transfers in 1981 and 1982 were reflected in the Report on the Civil Service Superannuation Fund made as at December 31st, 1982. The transfer in 1983 is reflected in this Report.

The value of the transfer in 1983 is equivalent to a reduction in the surplus as at December 31st, 1982 equal to $1,617,800.

(v) A number of amendments were made to comply with changes to the Pension Benefits Act of Manitoba. The amendments which had a significant financial effect are described below.

PROTECTION OF PENSION RIGHTS

Effective January 1st, 1985, the pension generated for service after January 1st, 1985 is fully protected on termination of employment after 5 years of service. This protection is not dependent on a decision by the employee to leave his contributions in the Fund.

Effective January 1st, 1985, there is full protection of the pension generated for service prior to January 1st, 1985. The pension generated for this service is now fully protected after 5 years of service.

There was no change in the right of such an employee to elect to receive a cash settlement in respect to this service.

The present "45 & 10" rule continues to apply to service between July 1st, 1976 and January 1st, 1985.

Previously, a percentage of the pension was protected if the employee had completed at least 5 years of service but had not completed 10 years of service. The percentage was equal to 50% after 5 years, increasing by 10% per year to 100% after 10 years.

50% TEST

Effective January 1st, 1985, when an employee dies in service, terminates service or retires, and becomes entitled to a pension or annuity, a 50% test is applied. This test compares the accumulated value of employee contributions in respect of service after January 1st, 1985 to 50% of the commuted value of the pension or annuity generated as a result of this service. If this accumulated value exceeds 50% of the commuted value, the excess is refunded or used to provide additional benefits. For the purpose of this test, the accumulated value of employee contributions excludes the portion of these contributions and interest accruals which were allocated to the Superannuation Adustment Account.

INTEREST PAID ON LUMP-SUM CASH PAYMENTS

Effective January 1st, 1984, the rate of interest credited on employee contributions must be calculated in accordance with a method approved by the Superintendent of Pensions. This method should result in a rate not less than:

(A) a rate within 1% of the rate earned by the Fund, or

(B) a rate paid by a financial institution on investments with that institution.

This requirement is applicable to contributions made for service on or after January 1st, 1984.

For such contributions it is anticipated that interest will be calculated by using the average of the rates of interest credited on non-chequing savings accounts operated by the 5 largest chartered banks in Canada.

No change was made to the methods used to determine the interest added to contributions made for service prior to January 1st, 1984.

For such service cash settlements paid on death will continue to be calculated by adding interest at the rate of 3% per year. Cash settlements paid on termination of service will continue to include interest credited up to December 31st, 1983. No interest is credited after that date.

SURVIVORS BENEFITS BEFORE RETIREMENT

Effective January 1st, 1985, changes in the death benefit are applicable if an employee dies after completing 5 or more years of service. This change is applicable to service after January 1st, 1985. The death benefit must be equal to the commuted value of the pension generated as a result of such service. The death benefit must be paid in the form of a lifetime pension or annuity to the surviving spouse or dependents. If there is no spouse or dependents, a lump-sum payment is paid to the estate. The present provisions of the Act continue to apply if death occurs prior to the completion of 5 years of service.

Previously, a pension was paid to the surviving spouse or dependent children if death occured after 10 or more years of service. If death occured prior to the completion of 10 years of service, or if no spouse or dependent children survived the deceased employee, a cash settlement was paid to the estate.

The changes made to comply with the changes to the Pension Benefits Act increased the liabilities of the Fund by $34,722,700 as at December 31st, 1982. This amount makes no allowance for any increase in the percentage of contributions allocated to the Superannuation Adjustment Account.

In total these amendments caused a reduction in the surplus of the Fund which was equal to $63,332,700 as at December 31st, 1982.

(b) Investment Reserve

Effective January 1st, 1983, the fixed income investment reserve was expanded to cover all investments. The investment reserve was increased by $1,000,000 which was transferred from the reserve for present and future benefits.

Effective January 1st, 1984, 1/10 of 1% of the book value of investments will be transferred each year to the investment reserve from investment income. The reserve can not exceed 1% of the book value of investments.

An impairment in the value of investments, considered to be permanent by the Investment Committee, is charged to the investment reserve.

5. Experience of the Fund

The valuation is based on a set of assumptions as to those factors which will affect the Fund financially in future years. The factors which are of financial significance to the Fund are:

(a) the rate of return earned on the invested assets of the Fund,

(b) the rate at which salaries increase,

(c) the incidence of death after pension commences,

(d) the incidence of death prior to the date the pension commences,

(e) the incidence of termination of service, and the proportion of terminating employees who elect a deferred pension,

(f) the incidence of becoming disabled,

(g) the incidence of retirement prior to age 65 for reasons other than total disability,

(h) the rate at which interest is expected to be credited on required contributions, and

(i) the expenses of administering the Fund.

Assumptions are developed in respect of each of these factors in order to determine:

(i) the amounts of the contributions expected to be received and the benefits expected to be paid in each future year on the basis of the present provisions of the Act, and

(ii) the present value of these expected contributions and benefits for the purposes of establishing the present financial position of the Fund.

Each assumption has been developed from the assumptions used in our 1980 Report and 1982 Report.

Any differences between the actual experience and expectations based on the existing assumptions, have been analyzed. Where appropriate, the assumptions used previously have been modified to reflect the results of this study of the experience.

The assumed rate of return, the expected general increases in salaries, and the rate at which interest is expected to be credited on required contributions is based on experience during the 20-year period prior to the valuation date.

The experience concerning the utilization of benefits has been studied over the 3-year period and 9-year period prior to the valuation date. The experience prior to this time is not as useful in developing the rates since it does not reflect subsequent changes in the Act and in the level of economic activity.

The number of deaths, terminations, disablements, and retirements which actually occurred during these periods were compared to the number expected to occur. The numbers expected to occur were calculated by using the rates of utilization assumed in the 1980 Report.

(a) Rate of Return on the Assets of the Fund

Rates of return have been calculated for the total assets of the Fund. Rates of return have also been calculated for the fixed income and equity portions of the Fund.

The fixed income portion of the Fund includes bonds, short-term investments with the Minister of Finance, mortgages, units of pooled fixed income investment funds, and accrued interest less the amount allocated to the investment reserve.

The equity portion of the Fund includes common shares, preferred shares, shares or units of pooled equity investment funds, real estate equity investments, and accrued interest, less the amount allocated to the investment reserve.

The total assets of the Fund consist of the fixed income portion, the equity portion, computer equipment and development expenses, furniture and fixtures, cash, plus any amounts receivable less any amounts payable as at December 31st of each year.

The rates of return earned on the Fund each year during the last 6 years are shown in the following table:

Year Ending December 31st	Fixed Income Portion	Equity Portion	Total Fund
1978	9.39%	6.86%	9.22%
1979	9.92	5.81	9.76
1980	10.18	11.93	10.20
Average (1978 - 1980)	9.83%	8.20%	9.73%
1981	11.09%	11.39%	11.07%
1982	11.99	12.66	11.99
1983	12.10	8.43	11.63
Average (1981 - 1983)	11.73%	10.83%	11.56%

The rates of return on the fixed income portion of the Fund are based on the amortized cost of the fixed income investments less the amount allocated to the investment reserve. Income on the fixed income investments each year is the interest earned less the amount credited to the investment reserve.

The rates of return on the equity portion of the Fund are based on the book value of the equity investments, as shown in the accounts of the Fund, less the amount allocated to the investment reserve. Income on the equity investments each year is the dividend income plus any profits and less any losses realized on sales in that year less the amount credited to the investment reserve.

In our 1982 Report, it was assumed that the rate of return would be 9.25% per year. The rate of return earned during 1983 compares favourably with the assumed rate of return.

The rate of return assumed in an actuarial valuation must represent a reasonable balance between current investment rates and the level of investment earnings expected to be realized in the future.

A good indication of the rates of return likely to be available in future years can be obtained from a study of the rates which have been available over a period in the past. It is important that the period studied be long enough to include the effect of a variety of economic conditions. This is achieved by using a 20-year period. In this Report we have used the 20-year period from

January 1st, 1964 to December 31st, 1983. During this period, the average rate of return on each category of fixed income investment in which new investments in the Fund have been made was as shown in the following table:

Investment Category	20-Year Average Rate of Return	Basis
Federal Bonds	8.91%	Long-Term Federal Bonds
Provincial Bonds	9.55	M.Y.W. Provincial Bonds
Corporate Bonds	9.79	M.Y.W. Industrial and Utility Bonds
N.H.A. Mortgages	10.41	N.H.A. mortgage interest rates less 1/10 of 1% for servicing
Conventional Mortgages	10.82	Conventional mortgage interest rates less 1/10 of 1% for servicing

Similar results have not been provided for equity investments since, unlike fixed income investments, an equity investment is attractive only if there is an increase in the value of the investment during the term of the investment. Over long periods in the past, these increases in value have been sufficient to cause the rate of return obtained on equities to exceed the rate of return on fixed income investments. In the last 20 years, there have been significant fluctuations in the value of equity investments. As a result, the dates on which such investments are purchased and sold have an important influence on the results that are obtained.

It has been assumed that, in future, it will be possible to choose these dates with sufficient skill so that the rate of return obtained on equity investments will be at least as high as the rate of return which could have been obtained on fixed income investments. As it is possible to allocate all of the Fund to fixed income investments, it is reasonable to assume that existing investments in equities will be retained, and new investments in equities will be made, only if such investments are expected to produce a higher rate of return than fixed income investments. Otherwise, investments in equities would not be justified.

The amounts invested in short-term investments have been excluded from this tabulation. Such investments are used to produce income for the Fund until it is appropriate to make more permanent investments. Use of this procedure helps to increase the rate of return earned by the Fund.

Over the 6-year period prior to the valuation date, the new fixed income investments of the Fund were distributed by category in the following proportions:

Investment Category	Proportion
Federal Bonds	21.48%
Corporate Bonds	37.23
Provincial Bonds	2.07
N.H.A. Mortgages	24.38
Conventional Mortgages	14.84
	100.00%

This information can be used to determine the expected rate of return which will be obtained in future years if it is assumed that:

(i) the distribution of new fixed income investments by category over the 6-year period is a good representation of the investment policy which will be followed in the future, and

(ii) any equity investments will produce at least as high a rate of return as fixed income investments.

A rate of return of 9.90% per year is produced by the use of this distribution of new fixed income investments for the 6-year period prior to the valuation date, and the 20-year average rate of return obtained on each category of fixed income investment.

There has been a substantial increase in the rates of return produced by the use of this procedure. In prior 20-year periods the results were as follows:

20-Year Period Ending	Average Rate of Return
December 31st, 1977	7.55%
1980	8.52
1982	9.57

The higher rate of return obtained during the latest period of 20 years is due to an environment in which investors in bonds and mortgages obtained rates of return that were more attractive than they have been during any significant period of time in the past.

In the last 5 months of 1982, there was a large decline in the rate of interest available on new fixed income investments. There has been no significant change in interest rates in 1983. For bonds and mortgages, this decline has caused the rate of return obtained to be 11% to 13% per year during 1983 and 1984. During the last 6 months of 1981 the corresponding rates of return were 14% to 19%.

A decline of this magnitude makes it desirable to allow for the possibility that the rates of return which are available in future will be less than the rates of return which were available during the latest 20-year period.

This allowance could be made by excluding from the calculation the very high rates of return that were available during the last 6 months of 1981. If this is done, the 20-year average rate of return becomes 9.69% per year.

Allowance has been made for:

(i) the expected costs of managing investments in bonds. This expected cost is equal to .05 of 1% per year. Bonds constitute approximately 60% of the fixed income investments. As a result, the allowance for managing these investments is .03 of 1% per year, and

(ii) the allocation made to the investment reserve each year. This allocation is equal to .10 of 1% of the book value of investments per year.

After provision for these 2 items is made, the 20-year average rate of return becomes 9.56% per year.

On the basis of the foregoing considerations, it is reasonable to expect that the Fund will earn a rate of return of at least 9.50% per year, on average, in the future.

The assumed rate of return will be the same as the actual rate if there is no change in the distribution of investments by category, and no gains or losses are realized on the sale of investments. The same or better results would be achieved if any losses are more than offset by an increase in investment income.

A portion of the assumed rate of return of 9.50% per year is due to inflation. This portion can be obtained by determining

the average annual rate of increase in the Consumer Price Index. During the 20 years prior to December 31st, 1983, the Consumer Price Index increased by an average of 6.67% per year.

If the inflationary component in the assumed rate of return is 6.75%, the real rate of return is expected to be 2.75% per year, in future. In our 1982 Report, the inflationary component was 6.50% per year and the real rate of return was also expected to be 2.75% per year.

There are 2 reasons for identifying the 2 parts of the rate of return. These are:

(i) The assumed rate of return is based on an assumption as to future economic conditions. So also is the assumption made as to the rate at which salaries will increase in future years. Consequently, in order to ensure consistency the same allowance for inflation, i.e. 6.75% per year, is used in developing both actuarial assumptions.

(ii) By identifying the real rate of return, a good indication can be obtained of the significance of the rate assumed in other than average economic conditions. The assumption of a real rate of return of 2.75% per year implies that investments obtained for the Fund are expected to yield a rate of return of 2.75% per year in excess of the average rate of inflation during the period that these investments are held.

(b) Rates of Salary Increase

Salary increases occur as a result of:

(i) general increases. These increases in salary are granted to all employees and reflect changes in economic conditions, and

(ii) service, merit and promotional increases. These increases in salary are granted, on an individual basis, to recognize an employee's service and increased value to the organization.

Each class of increase is considered separately in developing the rates at which salaries can be expected to increase in the future.

(i) General Increases in Salary Levels

The 2 components of general increases in salaries are:

(A) the inflationary component. Employees seek increases in salary in order to offset any decreases in purchasing power which are caused by inflation, and

(B) the productivity component or increase in the standard of living component. The productivity component consists of that portion of general increases in salaries which are not offset by inflation. These increases are due to factors such as increases in the real value of goods and services produced per employed person. An increase in productivity is made possible by the greater use of automated or other equipment. Other increases can occur as a result of increases in qualifications needed to fulfill a position.

The inflationary component of future increases in salaries should be the same as the inflationary component included in the rate of return assumed to be earned on the assets of the Fund in future years. As explained in the previous subsection of this Report, the period used requires the allowance made for inflation in the future to be at the rate of 6.75% per year.

The productivity component is based on a study of increases in the average salaries of employed persons in Canada during the 20-year period prior to December 31st, 1983. The productivity component is obtained by deducting the inflationary component from these increases in salaries. During this period, the productivity component was equal to 1.83% per year.

The productivity component has decreased steadily in recent years. In the last 6 years, the standard of living has decreased by an average of .17% per year.

Past increases in the standard of living were greater than increases in productivity during the same period. It is likely that at least part of this difference will need to be absorbed before normal increases occur. This will cause increases to be lower in the future than they have been over long periods in the past.

On the basis of these considerations, an allowance of 1.00% per year was made for the productivity component of general increases in salary. This allowance is the same as the allowance which was made in our 1982 Report.

The expected general increases in salary in future are obtained by adding together the increases expected to occur in each component. On that basis, general increases in salary are expected to occur at a rate equal to 7.75% per year, on average this rate consisting of an average expected productivity increase of 1.00% per year plus an allowance for future inflation at a rate of 6.75% per year.

(ii) Service, Merit and Promotional Increases

The following table shows, for each age group of employees, the rates of service, merit and promotional increases which have been adopted for use in this Report. Separate rates for male and female employees have been adopted as the experience of the Fund indicates that a statistically significant difference in salary patterns exists.

Assumed Annual Rates of Service, Merit and Promotional Increases

Ages	Males	Females
20 - 25	7.1%	5.4%
25 - 30	4.9	3.7
30 - 35	3.0	2.8
35 - 40	1.8	2.3
40 - 45	1.2	2.1
45 - 50	1.0	1.4
50 - 55	.7	1.0
55 - 60	.7	.9
60 - 65	.5	.8

These rates were obtained by first making a study of the actual rates of increase in salary for service, merit and promotional reasons among employees. The results of the study were then compared to the previously adopted salary scales.

The following procedure was used in this study.

The average salaries received during 1983, by each group of employees in the same quinquennial age and length of service subdivision, were compared with the average salaries of other groups of employees who, on average, are 5 years older with 5 more years of service, are 10 years older with 10 more years of service, are 15 years older with 15 more years of service, and so on. For this purpose, we excluded the salaries of those employees who are receiving more than twice as much or less than half as much salary, as the average employee in that age and service group.

A comparison of the actual increases in salary to those expected was made. This comparison indicated that an adjustment should be made to the previously adopted rates of increases in salary. The adjustment was made by reducing by 25% the difference between the actual percentage change in salaries for each quinquennial age group and the expected percentage change.

(c) Incidence of Death After Pension Commences

The study of mortality rates after pension commences differentiated between:

(i) employees who retired in at least average health,

(ii) employees who received a pension due to total disability, and

(iii) survivors of employees who died in service or while in receipt of pension.

This separation makes it possible to recognize any differences in the rates of mortality which are due to the way in which the pension commenced.

The results of this study are shown in the following table:

		1980 - 1983		1975 - 1983	
		Actual	Expected	Actual	Expected
Males	- Non-disabled	287	296	718	722
	- Disabled	28	26	71	71
	- Survivors	2	2	3	4
Females	- Non-disabled	66	85	163	201
	- Disabled	6	9	22	26
	- Survivors	21	19	41	35
		410	437	1,018	1,059

The number of deaths amongst non-disabled male pensioners was similar to the number expected to occur. As a result no changes were made to the rates of mortality for non-disabled male pensioners.

The number of deaths amongst disabled male pensioners was similar to the number expected to occur. A long term disability income plan is now in effect for employees in the Civil Service. This plan is expected to cause an increase in the number of applications for disability pensions. The group of employees expected to be classified as disabled under the Fund in the future is expected to be subject to lower rates of mortality than would have been expected if the plan had not come into effect. As a result the rates of mortality for disabled pensioners were decreased by 10%. On the basis of these new rates the number of deaths expected to occur amongst disabled male pensioners is equal to 64 during the 9-year period prior to the valuation date.

No change was made to the anticipated rate of mortality amongst those who are already receiving a disability pension.

The number of deaths amongst male survivors was equal to the number expected during the 3-year period prior to the valuation date. It is similar to the number expected during the 9-year period prior to the valuation date. However, the actual experience age by age did not reproduce the expected experience very well. For this group of beneficiaries, there is not enough accumulated experience to determine the precise adjustment that should be made. Under these conditions it is common to use the same mortality rates as are used for healthy pensioners of the same sex. As a result, the rates of mortality adopted for male beneficiaries are the same as the rates of mortality adopted for healthy male pensioners.

The number of deaths amongst non-disabled female pensioners was less than the number expected to occur during the 3-year and 9-year periods prior to the valuation date. A substantial reduction was made to the mortality rates assumed for non-disabled female pensioners. On the basis of these new rates, 175 deaths were expected to occur during the 9-year period prior to the valuation date.

The number of deaths amongst disabled female pensioners was less than the number expected during the 3-year and 9-year periods prior to the valuation date. As a result a reduction was made to the mortality rates for disabled female pensioners. A further reduction of 10% was made to these rates of mortality in anticipation of the lower rates of mortality expected due to the introduction of the long term disability income plan. On the basis of these new rates, 22 deaths would have been expected to occur amongst disabled female pensioners during the 9-year period prior to the valuation date.

For female survivors, the mortality rates currently in use were found to be suitable and as a result, no changes were made to the rates of mortality for this group of pensioners.

(d) Incidence of Death Prior to the Date the Pension Commences

A study was made of the incidence of death in service amongst employees contributing to the Fund.

The results of this study are shown in the following table:

	1980 - 1983		1975 - 1983	
	Actual	Expected	Actual	Expected
Males	114	176	413	512
Females	29	35	91	97
	143	211	504	609

The number of deaths amongst males and females was less than the number expected during the 3-year and 9-year periods prior to the valuation date. As a result, the rate of mortality were reduced to reduce, by 25%, the difference between the number of deaths and the number expected to occur during the 9-year period prior to the valuation date. On the basis of these new mortality rates 487 deaths were expected to occur amongst males and 95 deaths were expected to occur amongst females during the 9-year period prior to the valuation date.

(e) Incidence of Termination of Service

(i) Leading to a Cash Settlement or a Deferred Pension.

Each employee who terminates service prior to retirement is entitled to receive either a cash settlement or a deferred pension, or both.

The results of the study of the incidence of termination of service are shown in the following table:

	1980 - 1983		1975 - 1983	
	Actual	Expected	Actual	Expected
Males	1,369	1,331	8,125	4,530
Females	2,547	3,289	11,980	10,404
	3,916	4,620	20,105	14,934

The foregoing tabulations include all employees who terminated service prior to retirement. More meaningful results can be obtained by excluding those employees whose service is not financially significant. A termination is considered to be financially significant if the terminating employee has completed at least 5 years of service or more than one-half of the average period of service which has been completed by employees of the same age.

The results of the study of the incidence of significant terminations of service are shown in the following table:

	1980 - 1983		1975 - 1983	
	Actual	Expected	Actual	Expected
Males	705	1,044	3,995	3,419
Females	1,450	2,394	6,919	7,530
	2,155	3,438	10,914	10,949

The number of significant terminations amongst males and females was similar to the number expected during the 9-year period prior to the valuation date. There were fewer terminations than expected during the 3-year period, 1980 - 1983.

This reduction was caused by an increase in the rates of unemployment. During periods of high unemployment, it is much more difficult to obtain suitable alternative employment. This causes a substantial decrease in the number of terminations of service. As a result, no changes were made to the rates of termination for males and females.

(ii) Proportion Electing a Deferred Pension.

An employee who has completed at least 5 years of service is entitled to a deferred pension. The provisions respecting the choice of a deferred pension or a cash settlement are as follows:

If the employee has attained age 45 and completed 10 years of service:

- for service after July 1st, 1976, employee must receive a deferred pension,

- for service completed prior to July 1st, 1976, employee may elect a deferred pension or cash settlement.

If the employee has not satisfied the '45 & 10' rule:

- for service after January 1st, 1985, employee must receive a deferred pension,

- for service before January 1st, 1985, employee may elect a cash settlement.

A study has been made of the decisions of those employees who were less than age 45 at the date of termination and were eligible to elect a deferred pension. The results of this study are shown in the following table:

	1980 - 1983		1975 - 1983	
	Actual	Expected	Actual	Expected
Males	55	84	238	348
Females	44	113	174	321
	99	197	412	669

The number of terminating employees who elected a deferred pension was less than the number expected to do so during the 3-year and 9-year periods prior to the valuation date. The recent changes to the Pension Benefits Act are expected to cause an increase in the number of employee who elect a deferred pension on termination of service. As a result no change was made to the proportions expected to elect a deferred pension.

As indicated an employee who has completed at least 10 years of service and attained age 45 at the date of termination must take a deferred pension in respect of service after July 1st, 1976. It has been assumed that these employees will also take a deferred pension in respect to service prior to July 1st, 1976.

Deferred pensions are increased for the period between the date of termination and the date of commencement of the pension.

These increases in deferred pension are not financed by the contributions allocated to the Superannuation Adjustment Account but rather are financed out of basic contributions. As a result the liabilities generated by the increases in deferred pensions are reflected in the liabilities of the Fund for basic benefits.

Increases in deferred pensions are granted whenever there are increases in existing pensions. Each increase granted in deferred pensions is the same as the increase granted in existing pensions. It is expected that the increases granted in existing pensions will on average be equal to 2/3 of the rate of inflation. As a result it has been assumed that deferred pensions will be increased for the period between the date of termination and the date of commencement of the pension at a rate equal to 2/3 of the assumed rate of inflation.

(f) Incidence of Becoming Disabled

The results of the study made of the incidence of employees becoming disabled are shown in the following table:

	1980 - 1983		1975 - 1983	
	Actual	Expected	Actual	Expected
Males	35	38	105	107
Females	15	16	46	45
	50	54	151	152

The number of disablements occurring amongst males and females was similar to the number expected during the 3-year and 9-year periods prior to the valuation date. As indicated previously a long term disability income plan has been implemented for civil servants. This plan is expected to cause an increase in the number of applications for disability pensions. The rates of disability have therefore been increased by 20% to reflect this possibility.

On the basis of these new rates, 128 employees would have been expected to become entitled to disability pensions during the 9-year period prior to the valuation date. On the basis of these new rates, 54 female employees would have been expected to become entitled to disability pensions during the 9-year period prior to the valuation date.

(g) Incidence of Retirement for Reasons Other than Total Disability

The results of the study of early retirement for reasons other than total disability are shown in the following table:

	1981 - 1983		1975 - 1983	
	Actual	Expected	Actual	Expected
Males	675	310	1,373	827
Females	217	148	523	420
	892	458	1,896	1,247

The actual number of retirements prior to age 65 was greater than the number expected to occur during the 3-year and 9-year periods prior to the valuation date. Much of the recent 3-year experience was caused by the implementation of the Severance Act during 1983. The Severance Act permitted an employee to retire between March 1st, 1983 and June 30th, 1983, if age 55 had been attained and 2 years of service had been completed. It is estimated that the Severance Act caused 319 more employees to retire early than would have retired had this privilege not been available.

The Act was amended effective August 1st, 1984 to reduce the reduction applied to the amount of pension for retirement prior to age 60. The reduction was changed from 1/8 of 1% to 1/16 of 1% per month for each month between the date of retirement and the date of attainment of age 60.

The Act was also amended effective August 1st, 1984 to change the averaging period used in the calculation of the average salary which is used in the calculation of the amount of pension. The average salary was changed to the average of the highest 6 years' salaries selected from the last 12 years of service.

These changes are expected to cause an increase in the number of retirements prior to age 65. As a result the rates of retirement were increased to reduce by 50% the difference between the actual number of retirements and the number expected to occur during the 9-year period prior to the valuation date. The actual number of retirements was reduced by the additional retirements which occurred as a result of the Severance Act.

On the basis of these new rates 984 male employees and 426 female employees would have been expected to retire during the 9-year period prior to the valuation date.

(h) Rate at which Interest is Expected to be Credited on Required Contributions

A cash settlement can be paid to an employee who terminates service or to the beneficiary of an employee who dies in service. The cash settlement is equal to the employee's required contributions, with interest.

The rate of interest credited is determined in accordance with the following procedure.

For service before January 1st, 1984, contributions are credited with interest at the rate of 3% per year up to January 1st, 1984. If the event causing the payment of the cash settlement is death, these contributions are also credited with interest at 3% per year for the period after January 1st, 1984. If the event causing the payment of the cash settlement is a termination of service, these contributions are not credited with interest after January 1st, 1984.

For service after January 1st, 1984, contributions are credited with interest each year at a rate based on a moving average of the rates of interest credited on non-chequing savings accounts operated by the major chartered banks in Canada.

A good indication of the rates of interest likely to be credited in the future can be obtained from a study of the rates of interest which have been allowed on non-chequing savings accounts during the 20-year period ending December 31st, 1983. During this period, the average rate of interest was 6.78% per year.

On the basis of the above considerations, it is reasonable to anticipate that, in future, interest will be credited on required contributions at a rate equal to 6.75% per year.

(i) Expenses of Administering the Fund

In the 1982 Report, we indicated that the present value of the expenses expected to be incurred in administering the Fund in 1983, 1984, and 1985 was equal to $1,809,300.

The portion of these expenses attributable to administration in 1983 was equal to $612,800. This present value is equivalent to expected administrative expenses of $640,600 during 1983. The actual administrative expenses were equal to $662,510 during 1983.

The estimated expenses of administering the Fund during 1984, 1985, and 1986 are based on the expenses incurred in 1983. It is assumed that normal expenses will increase at the same rate as salaries. The present value of the expenses obtained by this procedure is equal to $2,014,000. This amount was increased by 25% to make allowance for the additional expenses related to pension reform. The resulting amount is equal to $2,517,500. This amount is shown in the Valuation Balance Sheet as a provision for future expenses.

6. Summary of Actuarial Assumptions Used in this Report

(a) Annual Rate of Return on the Assets of the Fund - 9.50% per year.

(b) Annual Rates of Salary Increase (including an allowance of 7.75% per year for future general increases in salary levels):

Age	Males	Females
20 - 25	15.4%	13.5%
25 - 30	13.0	11.7
30 - 35	11.0	10.8
35 - 40	9.7	10.2
40 - 45	9.0	10.0
45 - 50	8.8	9.3
50 - 55	8.5	8.8
55 - 60	8.5	8.7
60 - 65	8.3	8.6

It has been assumed the Yearly Maximum Pensionable Earnings under the Canada Pension Plan will increase at the rate of 12.50% per year until it catches up to the average earnings of Canadians, after which it will increase by the allowance for general increase in salary - 7.75% per year. The future average earnings of Canadians is determined by increasing the Average Weekly Earnings Industrial Composite (published by Statistics Canada) as at the valuation date by the allowance made for general increases in salary - 7.75% per year.

(c) Annual Rates of Death After Pension Commences (for selected ages):

Attained Age	Non-Disabled		Disabled*		Survivors	
	Males	Females	Males	Females	Males	Females
30	-	-	-	-	.0009	.0005
40	-	-	.0680	.0337	.0018	.0009
50	-	-	.0606	.0301	.0058	.0021
60	.0144	.0091	.0642	.0318	.0144	.0052
70	.0326	.0145	.0873	.0433	.0326	.0158
80	.0823	.0429	.1574	.0781	.0823	.0476
90	.2086	.1487	.3126	.1550	.2086	.1724
100	.4634	.4566	1.0000	1.0000	.4634	.4494

*These rates are applicable to employees who retire as a result of disablement after the valuation date. The rates of mortality assumed in our 1982 Report were used in calculating the liability for disability pensions which commenced on or before December 31st, 1983.

(d) Annual Rates of Death Prior to the Date the Pension Commences (for selected ages):

Attained Age	Males	Females
20	.0006	.0004
30	.0008	.0005
40	.0018	.0010
45	.0031	.0015
50	.0056	.0024
55	.0088	.0036
60	.0128	.0054
64	.0165	.0072

(e) Annual Rates of Termination of Service (for selected ages):

(i) leading to a cash settlement or a deferred pension:

Attained Age	Males	Females
20	.1040	.2280
30	.0472	.1330
40	.0198	.0500
45	.0142	.0380
50	.0098	.0295
55	.0062	.0160
60	.0050	.0075
62	.0024	.0050

(ii) proportion of eligible terminations expected to elect a deferred pension:

Attained Age	Males	Females
20	N/A	N/A
30	.3010	.3280
40	.3090	.4260
45	.3990	.4380
50	.5140	.4870
55	.5090	.5030
60	.7850	.7860
62	1.0000	1.0000

All employees terminating service after the attainment of age 45 and the completion of 10 years of service are assumed to choose a deferred pension in respect of all of their service.

Deferred pensions are assumed to be increased by a rate equal to 2/3 of the assumed rate of inflation (2/3 x 6.75% = 4.50%) for the period between the date of termination and the date of commencement of the pension.

(f) Annual Rates of Becoming Disabled (for selected ages):

Attained Age	Males	Females
35	.0006	.0012
40	.0012	.0024
45	.0018	.0036
50	.0024	.0048
55	.0048	.0048
59	.0096	.0144

(g) Annual Rates of Retirement for Reasons Other than Total Disability (for selected ages):

Attained Age	Males	Females
55	.0473	.0726
57	.0311	.0402
59	.0472	.0701
61	.1072	.1465
63	.1601	.1691
65	1.0000	1.0000

(h) Annual Rate at which Interest is Expected to be Credited on Required Contributions - 6.75% per year.

(i) Provision for Future Administration Expenses during the next 3 years - $2,517,500.

7. Valuation Results - Present Participants in the Fund

(a) Benefits Included in the Liabilities

The Fund consists of the accumulation of those contributions and other payments that were made during the period of employment of the present participants. This accumulation will be used to finance a portion or all of the benefits which these participants have been promised under the Act. The portion of the benefits so financed includes:

(i) a specified portion of each pension currently being paid,

(ii) 50% of the pensions being earned by those present employees who are not employed by an employer who is matching employee contributions,

(iii) cash settlements paid on termination of service (refunds of employee contributions plus interest),

(iv) the value of employee contributions transferred under reciprocal agreements,

(v) cash settlements paid on death before retirement (employee contributions),

(vi) 50% of the commuted value of pensions or benefits generated as a result of service after January 1st, 1985,

(vii) 100% of the value of the excess contributions made by employees for service after January 1st, 1985, and

(viii) 100% of the pensions and other benefits provided to employees for service while employed by an employer who matched the contributions made by employees.

The remainder of the benefits are financed by the Province and its agencies on a pay-as-you-go basis.

This valuation relates to the benefits which are earned during employment and the assets and contributions available to finance these benefits. The portion of the benefits to be financed by the Province and its agencies are not considered to be a liability of the Fund.

(b) Valuation Procedure

The entry age normal method of valuation has been used for this Report.

The objective of this method is to accumulate the funds to a level which, if supplemented by future contributions made at the rates presently required, will be sufficient to finance the accrued benefits at the valuation date, plus the benefits expected to accrue in the future.

The financial position of the Fund is indicated by the relationship between:

(i) the present value of the liabilities of the Fund in respect of the benefits promised, and

(ii) the present value of the funds available to finance these liabilities as they become due.

The actuarial valuation is the process whereby this relationship is quantified.

The present value of the liabilities of the Fund is determined separately for each benefit which the Fund provides. For each benefit, each employee, and each future year of service in the Fund, we determine:

(i) the probability of a benefit becoming payable at each future age based on the actuarial assumptions outlined in the previous Section of this Report,

(ii) a discount factor which makes allowance for the portion of the benefit which it is expected will be financed by future investment earnings, and

(iii) the amount of the expected benefit. The benefit expected to be paid is based on service completed prior to the valuation date, plus service expected to be completed after the valuation date but prior to the occurrence of the event that is causing the benefit to be paid. The expected benefit is calculated using the salary expected to be received prior to the occurrence of this event.

The present value of the liabilities for each benefit for each employee is the sum of the product of these 3 components over all possible future years of service for that employee. The present value of the Fund's liabilities for each benefit is the sum of the present value obtained for each employee.

The present value of the liabilities of the Fund in respect of pensioners and former employees entitled to a deferred pension is determined by a similar process except that the amount of the benefit is based on the amount of pension being paid at the valuation date or the amount of pension which will become payable in the future, whichever is applicable.

The principal sources of funds available to finance the liabilities of the Fund are:

(i) the present assets of the Fund, and

(ii) the contributions expected to be made to the Fund by the employees and the employers who are matching employee contributions.

The value of future contributions excludes the 10.20% of contributions allocated to the Superanuation Adjustment Account (Account). The portion of contributions allocated to the Account can be used only to finance increases in pensions when there are increases in the cost of living after the pension commences. The value of future pensions does not include any allowance for the additional pensions which are expected to be produced by such contributions.

Provision is made, however, for expected increases in each deferred pension for the period between the date of termination of service and the commencement of the pensions. These increases are financed by contributions not allocated to the Account.

While new entrants to the Fund in future years will affect the financial position, their number and distribution by age, sex and salary is less easy to predict than the other factors taken into account in the valuation. Consequently, the effect which new entrants to the Fund in future years will have on the financial position of the Fund has been considered separately and is discussed in a subsequent Section of this Report.

(c) Guarantee of Rate of Return

The Province has agreed to make additional payments to the Fund if, in any year, the rate of return earned on the assets is less than the rate of return which is guaranteed in that year. The guaranteed rate is equal to .50 of 1% more than the natural rate of return. In this Report, the natural rate of return is 9.50% per year. If the rate of return is less than 10.00% per year, the Province makes a payment to the Fund. The payment is equal to the difference between the amount which would have been earned on assets during that year had the guaranteed rate been obtained and the amount actually earned.

As a result of this procedure, a rate of return equal to 10.00% per year is guaranteed during 1984. Each Report on the financial position of the Fund provides information on the guaranteed rate for the following 3 years. If the rates of return are maintained at present levels or increased, no payment will be required to be made by the Province in these years.

The initial purpose of the guarantee was to act as an offset to the unfunded liability which was disclosed in our 1974 Report and which increased as a result of amendments made to the Act in 1976 and 1977.

A further reference to this guarantee is to be found in a note attached to the Valuation Balance Sheet.

The financial position of the Fund with respect to the present participants is shown in the Valuation Balance Sheet.

Civil Service Superannuation Fund
Valuation Balance Sheet
as at December 31st, 1983

ASSETS

Invested Assets:		
Fixed Income (amortized cost)	$378,021,490	
Less: Investment Reserve	(544,107)	
Superannuation Adjustment Account	(26,570,911)	$350,906,472
Equities (book value)		60,405,950
Net Invested Assets		$411,312,422
Computer Equipment and Systems Development		39,880
Amount due from Province under Section 24(1)		1,826,300
Accounts Receivable		810,064
Value of Future Contributions Expected to be Received		
- present employees	$484,489,400	
- Employers who are matching employee contributions	4,520,500	489,009,900
TOTAL ASSETS		$902,998,566

LIABILITIES

Value of Fund's Liabilities in respect of Current Benefits		
- retirement pensions	$ 86,609,600	
- survivors' pensions	8,362,200	$ 94,971,800
Value of Fund's Liabilities in respect of Future Benefits Earned for Service to December 31st, 1983		
(a) present employees		
- retirement pensions	$266,977,200	
- survivors' pensions	20,734,100	
- deferred pensions	18,590,200	
- contributions paid on death	1,150,400	
- refunds of contributions on termination	17,888,900	
(b) former employees		
- deferred pensions	9,828,400	335,169,200
Value of Fund's Liabilities in respect of Future Benefits Expected to be Earned by Present Employees for Service on and after January 1st, 1984		
- retirement pensions	$345,508,400	
- survivors' pensions	30,892,100	
- deferred pensions	43,797,500	
- contributions paid on death	4,459,200	
- refunds of contributions on termination	2,881,000	
- refunds due to 50% test	17,454,700	444,992,900
Value of funds to be transferred under Reciprocal Agreements		1,593,900
Value of deferred pensions to be paid as a result of transfers to reciprocating Manitoba employers		2,546,000
Accounts Payable		479,054
Present value of amounts to be paid to employers		2,003,300
Provision for Future Fund Expenses		2,517,500
Instalment payments to include prior non-pensionable employment under Section 60		290,898
Instalment payments to include periods of war service under Section 33		735,876
TOTAL LIABILITIES		$885,300,428
SURPLUS		$ 17,698,138

Notes:

1. The portion of the invested assets which is attributable to the Superannuation Adjustment Account has been deducted from the assets of the Fund. These assets are used to finance increases in pensions granted as a result of increases in the cost of living after the pension commences. None of these assets are available to help finance the other benefits promised under the Act.

2. The amount shown as accounts payable includes:

Accounts Payable	$ 17,103
Contributions and Interest Refundable	461,951
	$479,054

The Accounts Payable is the amount shown in the financial statements. The amount shown as contributions and interest payable was determined by adding up the amounts for those former employees entitled to a refund as at December 31st, 1983, but who had not been paid by that date.

3. The amount shown as accounts receivable has been determined as follows:

Accounts Receivable	$2,880,164
Less amount recoverable from Province	(2,070,100)
	$ 810,064

The Accounts Receivable is the amount shown in the financial statements. The amount previously considered to be recoverable from the Province under subsection 8(e) of the Severance Act has been deducted because the requirement to pay this amount has been cancelled.

4. An amount is shown as being paid to employers. This payment is to be made as a result of Bill 24. This amount is equal to the value of the additional amounts of pension which will be paid in future by employers as a result of the improvement in the early retirement privilege.

5. The financial results produced in this Balance Sheet are based on an assumed rate of return of 9.50% for each year in the future. These results make no allowance for the financial effect of the guarantee of the rate of return.

The guarantee made by the Province provides assurance that the Fund will earn a rate of return of at least 10% in 1984. If there is no change in the assumed rate of return at subsequent valuations, the Fund is assured of earning a rate of return of at least 10% per year in future.

The existence of the guarantee will not cause any payments to be made to the Fund in 1984 and it is unlikely to cause any payments to be made in the next few years. As a result, the Fund will not be any larger immediately as a result of the guarantee. Over time it is reasonable to expect that the guarantee will cause some additional payments to be made to the Fund.

The existence of this guarantee can be recognized either fully, partially or not at all. The objective of the guarantee is to help ensure the solvency of the Fund.

In this Report, it was not necessary to rely on the guarantee at all. This decision is in accordance with the purpose of the guarantee.

If the existence of the guarantee had caused the use of a higher rate of return, there would have been:

(i) a further improvement in the financial position of the Fund, and

(ii) a further reduction in the excess investment earnings that are obtained each year in the future.

Any reduction in excess investment earnings makes it harder for a surplus to be obtained and more likely for an unfunded liability to be revealed at a future valuation date.

8. Analysis of Valuation Results

The Valuation Balance Sheet discloses a surplus of $17,698,138 as at December 31st, 1983. In our 1982 Report, a surplus of $63,705,176 was disclosed. This surplus was used to finance amendments made to the Act.

The financial position of the Fund as at December 31st, 1983 can be reproduced if the surplus as at December 31st, 1982 is adjusted to recognize the various changes in the financial position which occurred during 1983. This procedure is demonstrated in the following schedule:

Surplus as at December 31st, 1982	$ 63,705,176
Reduction in surplus caused by amendments to the Act	(63,332,700)
Interest earned on surplus remaining, at the rate assumed in the 1982 Report (9.25%)	34,500
Expected surplus as at December 31st, 1983, before allowance is made for actual experience during the period under review and changes in expected future experience	$ 406,976
Effect of actual experience during period under review	6,924,562
Surplus as at December 31st, 1983, before allowance is made for changes in expected future experience	$ 7,331,538
Net improvement in financial position due to changes in expected future experience	10,366,600
Surplus as at December 31st, 1983	$ 17,698,138

The following factors influenced the actual experience during the period under review and improved the financial results:

(a) The greater than assumed rate of return on investments made for the Fund. The improvement in financial position due to this source during 1983 is equal to $9,200,700. Of this amount, $1,954,500 is attributable to the excess interest earnings on the assets supporting the liabilities for participants who were on pension during this period.

For the 3-year period ending December 31st, 1983, the excess interest earnings of the Fund were equal to $30,159,100. Of this amount, $6,639,600 is attributable to the excess interest earnings on the assets supporting the liabilities for participants who were on pension during this period.

(b) The smaller than expected number of former employees who elected a deferred pension on termination of service.

The following factors influenced the actual experience during the period under review and had an adverse effect on the financial results:

(a) The much smaller than expected number of terminations from service.

(b) The greater than expected number of retirements prior to age 65.

The following changes made to the actuarial assumptions improved the financial results:

(a) An increase in the assumed rate of return on the Fund.

(b) A decrease in the rates of mortality prior to the date the pension commences.

The following changes made to the actuarial assumptions had an adverse effect on the financial results:

(a) An increase in the rate at which general increases in salary are expected to occur in future years as a result of inflation.

(b) A decrease in the rates of mortality amongst non-disabled female pensioners.

(c) A decrease in the rates of mortality amongst disabled male and female pensioners.

(d) An increase in the rates of disablement.

(e) An increase in the rates of retirement prior to age 65.

9. Valuation Results - Future New Entrants

As indicated earlier, the method used to determine the expected cost of benefits provided by the Fund is known as the entry age normal cost method.

Under this method, the expected annual cost is determined as the level percentage of salary required each year to finance each projected benefit between the date of entry into the Fund and the commencement of that benefit. This expected annual cost is expressed as the theoretical contribution rates.

Future new entrants may have a significant effect on the Fund. This financial effect is determined by comparing:

(a) the theoretical contribution rates, and

(b) the required contribution rates under the Fund.

The theoretical contribution rates are based on:

(a) the benefits and eligibility requirements which existed as at December 31st, 1983,

(b) the changes made to the Act to comply with the changes made to the Pension Benefits Act which are effective January 1st, 1984 or January 1st, 1985,

(c) the distribution of the members by age, sex, and salary which existed as at December 31st, 1983, and

(d) the actuarial assumptions adopted for this Report.

On this basis, the theoretical rates compared to the required rates are as follows:

	Theoretical Contribution Rates	Required Contribution Rates	Margin
On C.P.P. portion of salary	4.48%	4.58%	.10%
On portion of salary in excess of C.P.P. earnings	6.14	6.29	.15

The existence of a margin in the contribution rates ensures that the financial position of the Fund will not be adversely affected when new entrants begin to contribute to the Fund.

10. Comments and Recommendations

During 1983, the financial position of the Fund has been affected by changes in actual and expected experience. These changes are automatically reflected in the financial results obtained.

The results obtained indicate that there has been a significant improvement in the financial position of the Fund during the period under review.

The surplus can be used in any way considered to be desirable.

11. Certification

We hereby certify that, in our opinion, the assets of the Fund, together with the contributions expected to be received from, and on behalf of the members of the Fund, are sufficient to provide the benefits promised by the Act as these fall due.

We will be pleased to discuss this Report with you at your convenience.

DATED at Winnipeg, this 9th day of November, 1984.

Respectfully submitted,

Louis E. Clément

Actuary

John A. Turnbull.

Actuary